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ABSTRACT

In order to assess the feasibility of a technologically enhanced education delivery, a Canadian community college offered an online course on HTML authoring. The instructor designed a Web site, which functioned as the "textbook", and updated it periodically according to lesson plans and student feedback. An electronic mailing list fostered communication among the students and instructor, who posted most messages regarding maintenance and technical issues. Levels of participation for the 14 students varied, with only half completing the final project: to produce a personal Web page. According to the course evaluation, some learners adapted readily to the fluid learning environment, but others were less self-directed and needed more structure. However, all students deemed the course's flexibility a very positive aspect, as each was employed and could complete course work at his/her own convenience. The instructor's dedication and knowledge was also praised, indicating that online teachers need the same qualities for success as in a traditional classroom, and probably more commitment since there are no designated class hours. The course demonstrated that not all students thrive in a virtual classroom, but it offers a unique fluidity and versatility advantageous to many. (Contains 26 references.) (YKH)

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Hypotheses for the Virtual Classroom: A Case Study

It is not only scientists who operate on the basis of hypotheses. Educators often have very little hard data on which to base important decisions. Politicians and educational bureaucrats have a great deal of influence on our educational institutions, and they, too, subscribe to hypotheses. A very common hypothesis in today's climate of fiscal restraint is that expensive teachers can be replaced by inexpensive computers and software. Not many teachers (and almost no politicians and administrators) have direct experience with technologically enhanced delivery of education. This paper begins with a case study of online education and concludes with a set of hypotheses about the virtual classroom that are quite different from the facile hypothesis of technological replacement.

Hiltz and Turnoff (1978) have written of computer mediated communication that "this fluid world is not an environment that everyone will find easy to adapt to or swim through. It very well can produce an individual future shock situation and may be difficult to digest by those who prefer a rigidly structured social order." It is clear that some of the learners in this case thrived in the asynchronous virtual classroom, but others drowned in the "fluid world."

In 1997, a Canadian community college offered, for the first time, a six-week general interest (non-credit) course on HTML authoring. There was only one assignment: to produce a personal Web page. The text was a specially designed Web site, and the means of communication was a mailing list. Fourteen learners registered for the course. While some private e-mail was exchanged, most of the course was conducted using the mailing list. One hundred and ninety-four class postings were logged.

The following table sums up the essence of the class interactivity. There were essentially two kinds of messages: maintenance (introductions, mailing list instructions, reassurance to

learners, comments on the weather, invitations to go skiing, goodbyes, etc.) and technical (questions and answers about the course content). The postings closely parallelled the interactivity of a real time classroom setting: maintenance messages predominated during the early and late days of the course, while technical messages predominated in the middle four weeks.

PARTICIPANT	MAINTENANCE MESSAGES	TECHNICAL MESSAGES	TOTAL MESSAGES
Instructor	60	46	106
Learner 11 *	3	12	15
Learner 13 *	2	13	15
Learner 7 *	3	9	12
Learner 9	5	7	12
Learner 5 *	4	7	11
Learner 14	4	2	6
Learner 3 *	3		3
Learner 10	2	2	4
Learner 6	2	1	3
Learner 4	1	1	2
Learner 12 **	2		2
Learner 1	1		1
Learner 2	1		1
Learner 8 *	1		1
TOTALS	94	100	194

Note: *One asterisk indicates that the learner produced a public home page.*
Two asterisks indicate that the learner produced a home page that was shared only with the instructor.

It is obvious that levels of participation varied greatly. The instructor dominated the

virtual classroom with 106 postings. Three learners produced only one posting, an introduction to the class. The more the learners participated in the class experience, the more likely they were to produce a final product: a personal home page mounted on their own ISP's server.

Social needs were important during this learning experience. The number of maintenance postings is almost equal to the number of technical postings. This is partially attributable to the instructor's desire to make this experimental course a success by establishing a welcoming atmosphere, but it also came from learner needs. Learners frequently engaged in seeking reassurance and in reassuring with respect to course content. However, the social experience had an importance of its own: One learner requested a list of names and e-mail addresses of all participants, even though all had introduced themselves.

A great deal of the activity occurred on weekends. These adult learners were all employed, and it is quite natural that they would do much of their course work on weekends. The level of commitment from the instructor was great: The instructor was available for the six-week period, seven days a week, with a promise to respond to all e-mail in no more than twelve hours. Instructor response time could often be measured in minutes, rather than hours.

The fluidity of HTML text was a very positive aspect of the course. The instructor updated the text, often on a daily basis, to accommodate learner needs. Some text updates were simply a matter of rewording for the sake of improved clarity; other updates involved significant changes to the Web site. For example, when learners experienced difficulties with their first FTP sessions, the FTP instructions were changed to include screen captures of an active FTP session, in addition to the verbal instructions that were initially provided.

As can be seen in the summary table, only seven of the fourteen learners produced a course product. Why was this the case? In the traditional classroom an instructor is able to read

facial expressions and body language and perhaps come to some tentative conclusions with respect to the question. In an online group, direct verbal feedback is required.

In order to elicit feedback, a course evaluation was conducted at the end of the six weeks. An open-ended questionnaire was deliberately chosen to allow the learners to express themselves freely. An analysis of three of the learner's responses is particularly interesting in helping us to understand the lack of participation of a significant percentage of the class members.

Here is a sampling of the extensive comments of Learner 11.

1. How has this course met your expectations?

> *[...] it has exceeded them. I actually learned a program or two. Learned links. Built my very first webpage (scary stuff). Use of FTP (even scarier but much easier then I thought). And started advertising it. Wow! What an accomplishment in only 6 weeks of virtual classrooms. Love the format and flexibility of this virtual classroom.*

It is clear that Learner 11 adapted very well to the fluid learning environment. The word "flexibility" appears frequently in his evaluation.

3. In what ways has the facilitator been effective?

> *[The instructor] answered every-one of our questions. He has done his research and wasn't shy about finding out the more obscure (check spelling) and difficult answers to our questions. He treated our questions seriously and with a sense of humour that promoted a comfortable atmosphere in a difficult medium (we don't see each other or hear each other). We come from a varied background and workplace environments and felt at home commenting thanks to his cyber manners.*

While the emphasis here is on the instructor's technical expertise, it is significant that Learner 11 comments on the instructor's "cyber manners." Awareness of the fine points of Netiquette is an essential quality for success in the online facilitation of learning. Moreover, a "sense of humour" is an important personal characteristic of an effective teacher in any environment, not just the virtual classroom.

> *The JOY of HTML webpage is a major plus! It has been my touch-stone throughout*

> *this course. Its updates are very valuable. The work [the instructor] put into those updates and insights exceeded my expectations.*

The regular updating of the text obviously helped Learner 11. Also noteworthy here is the level of commitment for the instructor in effecting the regular updates.

> *[The instructor] opened my eyes! I had never thought that people were still using "text based" cybersurfers! I changed my attitude about my work's site due to this. As per responses from [the instructor] I also noticed that he was using many different types of "cybersurfers" (Windows 3.1, Windows 95, DOS (text based), Internet Explorer 3.01, NetScape 3.01 and quite a few Webpage Editors). His variety of experience with all of these helped us understand our own limited (and sometimes frustrating) experiences with our own software. He keeps up with most (if not all) of what's new "out there" and shares his knowledge.*

Once again, Learner 11 raises the issue of flexibility, this time as it relates to the instructor's technical expertise and currency.

> *[The instructor's] comments are always productive and never critical. Excellent learner's/teacher's attitude!*

A good "attitude" on the part of the instructor is essential in any kind of delivery setting.

> *I greatly enjoy the flexibility the "virtual classroom" offers. During this 6 week course I've able to travel (Toronto, Ottawa and Montreal), work full-time and lose all of my data on my hard-drive. I didn't miss a single step. Due to its format I was able to catch-up (two weeks worth) and still produce. I could check-in anytime to the course. The six week length is excellent. It allowed for my learning curve. I permitted me to experiment. Get feedback. Get results in a short time without feeling pressure.*

Here Learner 11 deals with the greatest strength of the asynchronous classroom -- freedom from the constraints of time and place. Yet again, "flexibility" is the keyword.

> *8. Do you have any suggestions for improvement?*
>
> *Recommend three different types of Web-editors (one for Windows 3.1, another for Windows 95 and a third for other platforms). Ask that the people use these programs throughout the course so that we can all talk the same lingo and problem solving.*

It is especially interesting that Learner 11, who is so much at home in the fluid virtual environment, expresses a need for structure here, even if only in the choice of software.

9. Do you have any other comments?

What happened to the other "classmates"? You are probably asking yourself the same question.

Here the crucial issue of nonparticipation is raised by Learner 11. We will turn to evaluative remarks by two other learners in order to attempt to understand the reason for nonparticipation.

Here are some edited comments from Learner 3.

2. How has this course not met your expectations?

The structure of the course was lacking. This is only because of my task oriented personality. I hope that I produced the amount and quality of work you expected.

4. Do you have any suggestions for improvement?

A person like me needs structure eg. Complete an index.html by Feb. 1. Many people don't require this kind of prompting.

Learner 3 twice uses the word "structure." It is significant that he uses the word even in the context of this HTML authoring course, which was marketed as a general interest, non-credit course. The instructor had assumed that adults who registered for such a course would be self-directed learners, requiring minimal teacher-originated structure. This assumption must be examined in future course offerings.

The comments of Learner 7 echo those of Learner 3:

As it stands now, I could not recommend the course to anyone. In the future, start with the basics and add to it as the course progresses. Assignments are a must.

Learner 7 was clearly not comfortable with self direction. Learner 7 appears to have an external locus of control: For this individual, learning comes from without.

This case study involves only one course in which there were only fourteen participants. However, the experience (and especially the learners' evaluative comments) gave the author reason to formulate new hypotheses as we move toward the future of alternative, technology-

enhanced learning environments:

Online education is not for everyone.

Online learning requires more teacher commitment than a traditional classroom..

The same teacher characteristics that are effective in a traditional classroom will be effective in a virtual classroom.

Many learners require more structure than is easily supported in a virtual classroom.

Social interaction is an important part of a learning experience for many people.

Not all learners, even mature adults, are self-directed.

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